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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,102	02/04/2004	Sujeet Kumar	2950.21US02	4854

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EXAMINER

KOSLOW, CAROL M

ART UNIT PAPER NUMBER

1755

DATE MAILED: 07/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/772,102	Applicant(s) KUMAR, SUJEET	
	Examiner C. Melissa Koslow	Art Unit 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-20 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/2/04</u> . | 6) <input type="checkbox"/> Other: ____  |

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Applicant has complied with the requirements for receiving the benefit of an earlier filing date under 35 U.S.C. 120.

The disclosure is objected to because of the following informalities: On page 22, line 5, it is taught that the heating temperature is generally less than 500°C and preferably less than 500°C. Since claim 17 teaches a temperature of less than 400°C, it appears the second temperature should be 400, not 500. Appropriate correction is required.

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The subject matter is found nowhere in the specification. Applicant can insert the claimed subject matter into the specification to overcome this rejection.

Applicant has defined "yttrium" as a non-rare earth metal. While some definitions of "rare earth metal" includes yttrium, others do not. Accordingly, applicant's definition is acceptable and is that used to interpret the claims.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 3, 4, 8, 9 and 11 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 25, 29, 30, 32 and 33 of U.S. Patent No. 6,749,648. Although the conflicting claims are not identical, they are not patentably distinct from each other because the patent claims producing lithium titanate doped with lanthanum by heating and reacting a precursor aerosol comprising the metal precursors in an oxidizing atmosphere using a light beam. While the claims in the patent do not teach the oxidizing atmosphere comprises O<sub>2</sub>, the specification defines an oxidizing atmosphere as one that comprising an oxidizing gas such as O<sub>2</sub>. Thus the claims suggest that the oxidizing atmosphere can comprise O<sub>2</sub>. The claims in the patent suggest the claims in this application.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 16 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. patent 4,478,800.

This reference teaches forming metal sulfides by reacting metal oxides with H<sub>2</sub>S at a temperature of 200-700°C, where the metal oxides have a particle size of less than 40 nm (col. 4, lines 5-21 and col. 9, lines 5-12). Column 4, lines 57-65 teach the mass and size of oxide

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particles do not change during sulfurization and thus the particle size of the taught metal sulfides would be the same as that of the metal oxide from which it is formed. The reference clearly teaches the claimed process.

Claims 16 and 17 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. 6,447,577.

This reference teaches forming metal sulfides by reacting metal oxides with  $H_2S$  at a temperature of 40 or 120°C, where the metal oxides have a particle size is at most 100 nm. This is the identical process as that of claims 16 and 17, therefore, one of ordinary skill in the art would expect the taught sulfide particles to inherently have the same particle size as that of the metal oxide from which it is formed, absent any showing to the contrary, especially in light of the teaching of U.S. patent 4,478,800. The reference clearly teaches the claimed process.

Claims 1, 2 and 10 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. patent 4,548,798.

This reference teaches forming metal oxide particles by pyrolyzing in a gaseous reactant stream a metal alkoxide or acetylacetonate using a  $CO_2$  laser, which is an infrared laser. The metal can be lanthanum and the alkoxide or acetylacetonate acts as both the metal precursor and oxygen source, which is allow by the claims. The reference clearly teaches he claimed process.

Claims 1, 2, 10 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. patent 6,254,928.

This reference teaches producing abrasive particles used in chemical mechanical polishing methods by laser pyrolysis process where a metal precursor and an oxygen source, such as  $O_2$ , if the abrasive is a metal oxide are reacted in a gaseous stream using a  $CO_2$  laser,

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which is an infrared laser. The reference teaches forming any abrasive particles used in chemical mechanical polishing, which is known in the abrasive art to include cerium oxide. Thus the reference implicitly teaches producing cerium oxide by the taught method. Therefore the reference teaches the claimed process.

Claims 1, 2, 10, 11, 13 and 14 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. patent 6,099,798

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

This reference teaches forming cerium oxide particles by reacting a gaseous stream comprising a cerium precursor and an oxidizing agent, such as O<sub>2</sub> using an infrared laser. Column 4, lines 54-60 teach the gaseous stream can also contain a non-metal compound that absorbs infrared light. The reference clearly teaches the claimed process.

Claims 1, 2, 10, 11, 13 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. patent 6,290,735

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

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inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

This reference teaches forming abrasive metal oxide particles by reacting a gaseous stream comprising the metal precursor and an oxidizing agent, such as  $O_2$  using an infrared laser. Column 4, lines 20-22 teach the gaseous stream can also contain a non-metal compound that absorbs infrared light. The reference teaches forming any metal oxide abrasive particle, which is known in the abrasive art to include cerium oxide. Thus the reference implicitly teaches producing cerium oxide by the taught method using a cerium precursor. The reference teaches the claimed process.

Claims 1-6, 8, 9, 11 and 14 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. patent 6,749,648.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

This reference teaches producing a lanthanum doped lithium titanate particles, which has the formula  $Li_{0.33}La_{0.56}TiO_3$  by reacting a gaseous stream comprising an aerosol comprising water, the metal precursors, such as Li, Ti and La nitrates, and an oxidizing agent, such as  $O_2$  using an infrared laser. Column 7, lines 17-20 teach the gaseous stream can also contain a non-metal compound that absorbs infrared light. The reference clearly teaches the claimed process.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 4,478,800.

As stated above, this reference teaches the claimed process. The taught heating temperature of 200-700°C overlaps the claimed range. Process claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The reference suggests the claimed process.

Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6,090,200.

This reference teaches nanosized metal sulfide phosphor particles. The phosphors have a particle size in the range of 1-30 nm (col. 2, lines 39-40), which means the average size in this range. The taught average particle size range overlaps that claimed. While the reference does not teach the amount of dopant in the taught particles, it is notoriously well known in the art that the amount of rare earth dopant in taught metal sulfide phosphors is less than 20 mol% relative to the total metal content in the phosphor. This amount overlaps the claimed range. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974);



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*In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960).

Column 5, lines 26-29 teach the phosphors can have the formula ZnS:Eu, ZnS:Tb, SrS:Ce, or CaS:Tb. Thus the reference suggests the claimed rare earth doped metal sulfide particles.

Claims 18 and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6,153,123.

This patent teaches metal sulfide phosphors having an average particle size in the range of 0.3-3 microns, which overlaps the claimed range (col. 38, line 25). Table 1 teaches the phosphor can be cerium or europium doped alkaline earth sulfides. Column 35, lines 44-50 teaches the amount of dopant, which includes the taught rare earth dopant is 0.2-15 at% or mol%. Atomic and molar percent when referring to the doping amount in phosphors. The amount of dopant overlaps the claimed range. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The reference suggests the claimed rare earth doped metal sulfide particles.

Claims 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6,699,406.

This reference teaches rare earth doped metal chalcogenide phosphor nanoparticles. The amount of rare earth dopant is up to 60 mol%, which overlaps the claimed range. The particles have a size in the range of 1-100 nm (col. 5, lines 60-63), which overlaps the claimed range. This reference suggests the claimed particles because sulfide is a chalcogenide.

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Claims 8 and 12 are rejected under 35 U.S.C. 103(a) as being obvious over U.S. patent 6,099,798 in view of U.S. patent 6,589,496.

There is evidence in this file showing that the invention was owned by, or subject to an obligation of assignment to, the same entity as U.S. patent 6,099,798 at the time this invention was made. Accordingly, U.S. patent 6,099,798 is disqualified as prior art through 35 U.S.C. 102(e), (f) or (g) in any rejection under 35 U.S.C. 103(a) in this application. However, this applied art additionally qualifies as prior art under 35 U.S.C. 102(a) and accordingly is not disqualified as prior art under 35 U.S.C. 103(a).

Applicant may overcome the applied art either by a showing under 37 CFR 1.132 that the invention disclosed therein was derived from the inventor of this application, and is therefore, not the invention "by another", or by antedating the applied art under 37 CFR 1.131.

As discussed above, U.S. 6,099,798 teaches the claimed process. It does not teach the presence of a non-rare earth metal/metalloid in the taught cerium oxide particles. This reference does teach producing UV light blocking metal oxides in general. Accordingly, one of ordinary skill in the art would have found it obvious to use this process any known UV light blocking metal oxides, especially those based on the exemplified oxides. U.S. patent 6,589,496 teaches an improved UV light blocking cerium oxide that is doped with metals ion such as ions of magnesium, barium or strontium. Therefore one of ordinary skill in the art would have found it obvious to use produce the doped cerium oxide of U.S. patent 6,589,496 by the process of U.S. patent 6,099,798, where the reactant stream include a precursor for the dopant ion. The references suggest the claimed process.

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Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 7 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112 set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The claimed methods are not taught or suggested by the cited art of record.

U.S. patent 5,962,343 is cited as of interest since it shows as of 30 July 1996, cerium oxide was known to be used as an abrasive. U.S. patent 5,306,476 is cited as of interest since it shows the reaction of a metal oxide and  $H_2S$  forms the corresponding metal sulfide.

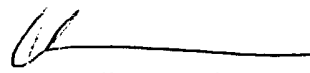
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached at (571) 272-1362.

The fax number for all official communications is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk  
July 19, 2004

  
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Primary Examiner  
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